Alan Vincent Di Vittorio

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EDUCATION:

Ph.D. in Environmental Science, Policy, and Management, University of California, Berkeley, May 22, 2008
- Division of Ecosystem Sciences, specializing in remote sensing and environmental biophysics
- Additional study: Human geography; Environmental philosophy, ethics and history
- Dissertation: A combined biochemical-spectral model for characterizing pine needle damage
- Advisor: Dr. Gregory Biging

M.S. in Aerospace Engineering and Sciences, University of Colorado, Boulder, December 2000
- Emphases: Remote Sensing, Atmospheric and Oceanic Science
- Thesis: An automated, dynamic threshold cloud-masking algorithm for daytime AVHRR images over land
- Advisor: Dr. William J. Emery

B.S. in Electrical Engineering and Computer Science, University of California, Berkeley, May 1996
- Forest and Resource Management Field Program, June-August 1996, UC Berkeley Forestry Camp

PUBLICATIONS:

Di Vittorio, A. V., and N. L. Miller (in review). Evaluating a modified point-based method to downscale cell-based climate variable data to high-resolution grids. *Theoretical and Applied Climatology*.

Di Vittorio, A. V., R. S. Anderson, J. D. White, N. L. Miller, and S. W. Running (2010). Development and optimization of an Agro-BGC ecosystem model for C_4 perennial grasses, *Ecological Modelling*, 221:2038-2053.

Di Vittorio, A. V. (2009). Enhancing a leaf radiative transfer model to estimate concentrations and in-vivo specific absorption coefficients of total carotenoids and chlorophylls *a* and *b* from single-needle reflectance and transmittance, *Remote Sensing of Environment*, vol. 113, pp. 1948-1966.

Di Vittorio, A. V. (2009). Pigment-based identification of ozone-damaged pine needles as a basis for spectral segregation of needle conditions, *Journal of Environmental Quality*, vol. 38, pp. 855-867.

Di Vittorio, A. V., and G. S. Biging (2009). Spectral identification of ozone-damaged pine needles, *International Journal of Remote Sensing*, vol. 30, no. 12, pp. 3041-3073.

Sayre, N. F., and A. V. Di Vittorio (2009). General: Scale. In *The International Encyclopedia of Human Geography*, R. Kitchen and N. Thrift, eds. Elsevier, St. Louis, MO.

Di Vittorio, A. V., and W. J. Emery (2002). An automated, dynamic threshold cloud-masking algorithm for daytime AVHRR images over land, *IEEE Transactions on Geoscience and Remote Sensing*, vol. 40, no. 8, pp. 1682-1694.

IN PREPARATION:

Di Vittorio, A. V., and N. L. Miller. Multi-scale uncertainty analysis of regional agro-ecosystem switchgrass simulations.

PRESENTATIONS:

Invited: Di Vittorio, A. V., et al., "Where to plant biofuel crops: Integrating ecology, economics, and potential land uses in a spatial model," Workshop on Biofuels in Latin America, March 17-18, 2009.

Award: Di Vittorio, A. V., "An enhanced leaf model for estimating pigment concentrations and *in vivo* specific absorption coefficients from leaf reflectance and transmittance," ESPM Graduate Research Symposium, Berkeley, CA, May 3, 2008.

Di Vittorio, A. V., "GIS-based ground truth validation of a forest canopy digital surface model produced by digital photogrammetry," ASPRS 2006 Annual Conference: Prospecting for geospatial information integration, Reno, NV, May 1-5, 2006.

POSTERS:
Di Vittorio, A. V., N. L. Miller, "Evaluating multi-scale grids for regional agro-ecosystem simulations of switchgrass," American Geophysical Union annual meeting, San Francisco, CA, December 14, 2010.

Di Vittorio, A. V., R. S. Anderson, J. D. White, N. L. Miller, and S. W. Running, "Development and optimization of an Agro-BGC ecosystem model for C_4 perennial grasses," Soil and Water Conservation Society, Sustainable Feedstocks for Advanced Biofuels workshop, Atlanta, GA, September 28-30, 2010.

Di Vittorio, A. V., R. S. Anderson, J. D. White, N. L. Miller, and S. W. Running, "Growing C_4 perennial grass for bioenergy using a new Agro-BGC ecosystem model," American Geophysical Union annual meeting, San Francisco, CA, December 17, 2009.

Di Vittorio, A. V., and N. L. Miller, "Bioenergy crop model simulation and evaluation of Miscanthus," American Geophysical Union annual meeting, San Francisco, CA, December 19, 2008.

AWARDS and HONORS:
Hannah & Frank Schwabacher Memorial Scholarship
William Carroll Smith Fellowship
Second best presentation: May 2008 Graduate Research Symposium;
Department of Environmental Science, Policy, and Management;
University of California, Berkeley
President, UC Berkeley Ski Team, 1995-1996

LANGUAGE:
Spanish—Intermediate reading, writing, and conversational abilities

QUALIFICATION SUMMARY:
- Two and a half years adding vegetation functionality and agricultural practices to the Biome-BGC ecosystem model
- Two and a half years developing a system to downscale global climate data to high-spatial resolution grids
- Twelve years of experience in digital image analysis and GIS for monitoring environmental change, including use of the following: ArcInfo, ArcView, ArcGIS, GRASS, QGIS, ENVI, PCI, Geospatial statistics, AVIRIS, AVHRR, Landsat
- Thirteen years of programming experience, including the following languages: C, R, AML, IDL, Visual C++, S-Plus, Visual Basic 6.0, FORTRAN, Scheme, LISP, MIPS, Dynamic C, HTML, MATLAB, UNIX/LINUX shell scripts
- Five years of teaching experience in technical, non-technical, and participatory subjects, with students of various ages and backgrounds
- Interdisciplinary research experience as demonstrated by my Ph.D. project, which combined plant biology and radiative transfer physics to assess a new approach for remotely sensing forest stress
- Experience using portable spectrometers and integrating spheres
- Plant biochemistry lab skills: pigment analysis and thylakoid extraction
- Forestry training: forest ecology, forest mensuration, silviculture, and forest management
- Five scientific papers and one book chapter published; one scientific manuscript in review and one in preparation; three conference presentations and four conference posters
- Extensive studies in Environmental Philosophy and History, Human Geography, and Science and Technology Studies
- Grant writing experience

REVIEW ACTIVITIES:
International Journal of Remote Sensing; since 2008
Remote Sensing of Environment; since 2010
IEEE Transactions on Geoscience and Remote Sensing; since 2010

RESEARCH EXPERIENCE:
Postdoctoral Fellow, Lawrence Berkeley National Laboratory, Earth Sciences Division
- January 2011-present; Advisor: Dr. Jeffrey Chambers
- Remote sensing and modeling of carbon cycle impacts from land use change and forest disturbance

Postdoctoral Scholar, University of California, Berkeley, Energy Biosciences Institute
- July 2008-December 2010; Advisor: Dr. Norman Miller
- Implemented perennial C_4 grasses (e.g. switchgrass, *Miscanthus sp.*) and agricultural practices in the computational ecosystem model Biome-BGC for simulating bioenergy crop production (C, R, ArcGIS, ENVI/IDL)
- Developed software to downscale global reanalysis data to a user-defined, high-spatial resolution grid (C, R, ArcGIS, ENVI/IDL, netCDF)
- Developed and implemented a framework for running and evaluating ecosystem models on a high-spatial resolution grid located on any terrestrial portion of the globe (C, R, ArcGIS, ENVI/IDL)
- Preliminary design of a GIS-based land suitability analysis system for biofuel crops based on ecology, economics, and socio-political factors (C, R, ArcGIS, ENVI/IDL)
- Co-authored three grant proposals for ecosystem modeling and GIS-based land suitability analysis

Graduate Student Researcher, University of California, Berkeley, Department of Environmental Science, Policy, and Management
- May 2005-June 2008; August 2002-December 2004; Advisor: Dr. Gregory Biging
- Composed and implemented a research plan for the development of a quantitative method for identifying and modeling ozone-damaged pine needles (C, R, ArcView, ArcGIS)
- Developed a GIS validation model from forest inventory data for digital photogrammetry of forest ecosystems (C, ArcInfo, AML)

Graduate Student Researcher, University of California, Berkeley, Department of Geography
- May 2007-July 2007; Advisor: Dr. Nathan Sayre
- Co-authored a book chapter on geographical scale
- Co-authored a research proposal to evaluate socio-ecological patterns of vegetation change in semi-arid grasslands

Staff Research Associate, University of California, Berkeley, Department of Environmental Science, Policy, and Management
- April 2002-July 2002; Advisor: Dr. Gregory Biging
- Developed a GIS validation model from forest inventory data for digital photogrammetry of forest ecosystems (C, ArcInfo, AML)

Graduate Research Assistant, Colorado Center for Astrodynamics Research, University of Colorado, Boulder
- August 1998-December 2000; Advisor: Dr. William Emery
- Developed and evaluated an automated cloud-masking algorithm for AVHRR data (C)
- Automated an AVHRR data processing procedure for creating vegetation indices (C, IDL, cshell script)
- Developed a snow mask for AVHRR-derived vegetation indices based on existing snow coverage data (ArcInfo, AML)

TEACHING EXPERIENCE:
Graduate Student Instructor, University of California, Berkeley
- Fall 2007: Administered the lab section for the course in Natural Resource Sampling. Prepared and gave four lectures on cluster sampling. This lab included field sampling exercises and computer-based analysis of the field data. Professor: Dr. Greg Biging
- Fall 2006, 2005, 2004: Taught discussion sections for the course in Environmental Philosophy and Ethics. Professor: Dr. Carolyn Merchant
- Spring 2006: Taught discussion sections for the course in Culture and Natural Resource Management. Instructor: Dr. Kurt Spreyer

Substitute Teacher, El Dorado County Office of Education
- September 2001-May 2002
- Taught in secondary school (classroom) and Independent Learning Center (one-on-one) settings

Adjunct Faculty, Los Rios Community College District
- August 2001-May 2002
- Administered the Visual Basic 6.0 Lab Course at Folsom Lake College Center, August 2001-December 2001

Ski Instructor, Kirkwood Resort Company
- February 2002-April 2002; November 1997-March 1998; December 1996-April 1997
- Taught skiing to beginner, intermediate, and advanced adults, and also to beginner children